

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- VI(NEW) – EXAMINATION – SUMMER 2019****Subject Code: 2160310****Date:21/05/2019****Subject Name: Rehabilitation Engineering****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Briefly describe the following terms: **03**
1. Orthosis
 2. Prosthesis
 3. Assistive Technology
- (b) Describe the tactual vision substitution techniques. **04**
- (c) Write a note on the components of upper extremity orthosis. **07**
- Q.2** (a) Explain the various standards for assistive technology. **03**
- (b) What is amputation? Write a short note on types of amputation. **04**
- (c) Explain in detail the engineering concepts in motor rehabilitation. **07**
- OR**
- (c) Enlist and explain the components of lower limb orthosis. **07**
- Q.3** (a) Define the following terms: **03**
1. Disability
 2. Impairments
 3. Rehabilitation Engineering
- (b) Enlist and categorize the components of electric powered wheelchair. **04**
- (c) Draw and explain schematic of stair-climbing wheel chair. **07**
- OR**
- Q.3** (a) Briefly explain the design aspect of ultrasonic cane to assist visually impaired person. **03**
- (b) Draw and explain the PHAATE model **04**
- (c) Explain the design concept of various prosthetics for lower limb. **07**
- Q.4** (a) Explain the structure of laser cane. **03**
- (b) Write a short note on auditory substitution devices. **04**
- (c) Describe the design of walking aids for mentally impaired patients. **07**

- Q.4** (a) Explain braille as a tactile reading substitute. **03**
- (b) Write a short note on cochlear implant. **04**
- (c) Give the classification of visual impairment and explain devices for visual augmentation. **07**

- Q.5** (a) Write a short note on wheelchair standards and tests. **03**
- (b) What is Augmentation? Enlist different visual augmentative devices for Reading. **04**
- (c) What is FES? Explain FES system with necessary schematics. **07**

OR

- Q.5** (a) Describe briefly the schematic diagram of muscle stimulator. **03**
- (b) Explain role of rehabilitation in sport related activity. **04**
- (c) Write as note on the structure of hearing aids with block diagram. **07**

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